(vi) Steering systems and steering-control systems;

(vii) Propulsion systems and their necessary auxiliaries and control systems;

(viii) Ship's service and emergency electrical-generation systems and their auxiliaries vital to the vessel's survivability and safety;

(ix) Any other marine-engineering system identified by the cognizant OCMI as crucial to the survival of the vessel or to the protection of the personnel aboard.

(2) For the purpose of this subchapter, a system not identified by paragraph (1) of this definition is a non-vital system.

(g) *Plate flange*. The term *plate flange*, as used in this subchapter, means a flange made from plate material, and may have a raised face and/or a raised hub.

[CGFR 68–82, 33 FR 18843, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9978, June 17, 1970; CGD 77–140, 54 FR 40602, Oct. 2, 1989; USCG–2003–16630, 73 FR 65175, Oct. 31, 2008]

§56.07–10 Design conditions and criteria (modifies 101–104.7).

(a) *Maximum allowable working pressure*. (1) The maximum allowable working pressure of a piping system must not be greater than the internal design pressure defined in 104.1.2 of ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2).

(2) Where the maximum allowable working pressure of a system component, such as a valve or a fitting, is less than that computed for the pipe or tubing, the system pressure shall be limited to the lowest of the component maximum allowable working pressures.

(b) *Relief valves*. (*modifies 101.2*). (1) Every system which may be exposed to pressures higher than the system's maximum allowable working pressure shall be safeguarded by appropriate relief devices. (See §52.01–3 of this subchapter for definitions.) Relief valves are required at pump discharges except for centrifugal pumps so designed and applied that a pressure in excess of the maximum allowable working pressure for the system cannot be developed.

(2) The relief valve setting shall not exceed the maximum allowable working pressure of the system. Its relieving capacity shall be sufficient to prevent the pressure from rising more than 20 percent above the system maximum allowable working pressure. The rated relieving capacity of safety and relief valves used in the protection of piping systems only shall be based on actual flow test data and the capacity shall be certified by the manufacturer at 120 percent of the set pressure of the valve.

(3) Relief valves shall be certified as required in part 50 of this subchapter for valves, and shall also meet the requirements of §54.15–10 of this subchapter.

(c) *Ship motion dynamic effects* (*replaces 101.5.3*). Piping system designs shall account for the effects of ship motion and flexure, including weight, yaw, sway, roll, pitch, heave, and vibration.

(d) *Ratings for pressure and temperature (modifies 102.2)*. The material in 102.2 of ASME B31.1 applies, with the following exceptions:

(1) The details of components not having specific ratings as described in 102.2.2 of ASME B31.1 must be furnished to the Marine Safety Center for approval.

(1) The details of components not having specific ratings as described in 102.2.2 of ANSI B31.1 must be furnished to the Marine Safety Center for approval.

(2) Boiler blowoff piping must be designed in accordance with §56.50–40 of this part.

(e) *Pressure design (modifies 102.3, 104.1.2, and 104.4)*. (1) Materials for use in piping must be selected as described in §56.60–1(a) of this part. Tabulated values of allowable stress for these materials must be measured as indicated in 102.3.1 of ASME B31.1 and in tables 56.60–1 and 56.60–2(a) of this part.

(2) Allowable stress values, as found in the ASME Code, which are restricted in application by footnote or are italicized shall not be used. Where multiple stresses are listed for a material, the lowest value of the listing shall be used unless otherwise approved by the Commandant. In all cases the temperature is understood to be the actual temperature of the component.

(3) Where the operator desires to use a material not listed, permission must

be obtained from the Commandant. Requirements for testing found in § 56.97–40(a)(2) and § 56.97–40(a)(4) may affect design and should be considered. Special design limitations may be found for specific systems. Refer to subpart 56.50 for specific requirements.

(f) *Intersections (modifies 104.3).* The material in 104.3 of ASME B31.1 is applicable with the following additions:

(1) Reinforcement calculations where applicable shall be submitted.

(2) Wherever possible the longitudinal joint of a welded pipe should not be pierced.

[CGFR 68–82, 33 FR 18843, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9978, June 17, 1970; 37 FR 16803, Aug. 19, 1972; CGD 73–254, 40 FR 40164, Sept. 2, 1975; CGD 77–140, 54 FR 40602, Oct. 2, 1989; CGD 95–012, 60 FR 48050, Sept. 18, 1995; CGD 95–028 62 FR 51200, Sept. 30, 1997; USCG–1998–4442, 63 FR 52190, Sept. 30, 1998; USCG–2003–16630, 73 FR 65175, Oct. 31, 2008]

Subpart 56.10—Components

§ 56.10–1 Selection and limitations of piping components (replaces 105 through 108).

(a) Pipe, tubing, pipe joining fittings, and piping system components, shall meet material and standard requirements of subpart 56.60 and shall meet the certification requirements of part 50 of this subchapter.

(b) The requirements in this subpart and in subparts 56.15 through 56.25 must be met instead of those in 105 through 108 in ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2); however, certain requirements are marked ''reproduced.''

[CGFR 68–82, 33 FR 18843, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9978, June 17, 1970; USCG–2003–16630, 73 FR 65175, Oct. 31, 2008]

§ 56.10–5 Pipe.

(a) *General.* Pipe and tubing shall be selected as described in Table 56.60–1(a).

(b) *Ferrous pipe.* ASTM Specification A 53 (incorporated by reference, see § 56.01–2) furnace welded pipe shall not be used for combustible or flammable liquids within machinery spaces. (See §§ 30.10–15 and 30.10–22 of this chapter.)

(c) *Nonferrous pipe.* (See also § 56.60–20.) (1) Copper and brass pipe for water and steam service may be used for design pressures up to 250 pounds per square inch and for design temperatures to 406 °F.

(2) Copper and brass pipe for air may be used in accordance with the allowable stresses found from Table 56.60–1(a).

(3) Copper-nickel alloys may be used for water and steam service within the design limits of stress and temperature indicated in ASME B31.1 (incorporated by reference; see 46 CFR 56.01–2).

(4) Copper tubing may be used for dead-end instrument service up to 1,000 pounds per square inch.

(5) Copper, brass, or aluminum pipe or tube shall not be used for flammable fluids except where specifically permitted by this part.

(6) Aluminum-alloy pipe or tube along with similar junction equipment may be used within the limitation stated in 124.7 of ASME B31.1 and paragraph (c)(5) of this section.

(d) *Nonmetallic pipe.* Plastic pipe may be used subject to the conditions described in § 56.60–25.

[CGFR 68–82, 33 FR 18843, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9978, June 17, 1970; CGFR 72–59R, 37 FR 6189, Mar. 25, 1972; CGD 77–140, 54 FR 40602, Oct. 2, 1989; CGD 95–028, 62 FR 51200, Sept. 30, 1997; USCG–2000–7790, 65 FR 58460, Sept. 29, 2000; USCG–2003–16630, 73 FR 65175, Oct. 31, 2008]

Subpart 56.15—Fittings

SOURCE: CGD 77–140, 54 FR 40602, Oct. 2, 1989, unless otherwise noted.

§ 56.15–1 Pipe joining fittings.

(a) Pipe joining fittings certified in accordance with subpart 50.25 of this subchapter are acceptable for use in piping systems.

(b) Threaded, flanged, socket-welding, buttwelding, and socket-brazing pipe joining fittings, made in accordance with the applicable standards in Tables 56.60–1(a) and 56.60–1(b) of this part and of materials complying with subpart 56.60 of this part, may be used in piping systems within the material, size, pressure, and temperature limitations of those standards and within any further limitations specified in this